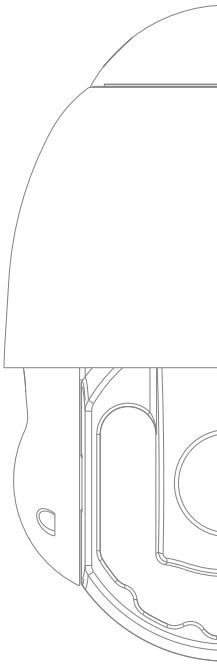
Infrared Mini High Speed Dome Camera

USE/INSTALLATION

SUPER SPEED DOME

USER INSTRUCTION



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Special Declaration

Before connecting and using this device, please read this manual carefully and properly preserved for reference in the future.

This manual may contain some inaccurate place in technology, or some printing error. The contents of this manual will update from time to time, but without notice if there is any upgrades; Update contents will be added in new version manual. We will improve or update the product or program of this manual at any time.

Careful Transport

During transport, custody and installation should prevent damage to this product by weight, severe vibration and soak.

Power Supply, Video Cable and Control Cable

For power supply cable, video cable and control cable, please adopt shielded cable and independent wiring, can not mix with other cables.

Electric Safety

Should obey all kinds of electric standard when using speed dome camera, make sure signal cable keep enough distance(at least 50m)with high voltage equipment or cables. If it is possible, please take lightning and surge protection measures.

Clean

When clean camera housing, please use dry soft cloth to wipe, If it is very dirty, please use neutral cleanser to wipe lightly. Do not use strong or grind cleanser to prevent its housing from scratching.

Strictly Sealed

Prevent liquid or other things from getting into speed dome housing, else it will cause permanent damage.

Please do not use camera beyond limited temperature and humidity

Speed dome camera working temperature:-25℃ to 50℃, humidity less than 90%.

Please do not install camera near air conditioner's outlet

Under following situation, lens will be fogged because of condensation:

*Use under the environment where the temperature rise and down frequently which caused by the air conditioner power on and off frequently

*Use under environment which can make glass fog

*Use under environment full with smoke or dust.

Please do not make camera toward to strong light source, such as the sun

Toward camera to strong light source for a long time will damage the color filter on CCD, then it will make image lose color.

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1.1 Product Feature

Strong Intelligent Function

- PELCO-D/P,Hikvision,Dahua protocol auto diagnosis.
- 2400.4800,9600 baud rate auto diagnosis.

Strong Horizontal and vertical Function

- Max 200° /s high speed rotate function.
- Vector driver technology, ensure P/T function finished in the shortest route, making video image preview more comfortable.
- Precision stepper motor subdivision technology, speed dome's lowest rotate speed reach 0.6 degree per second. Under high zoom situation, can move image more accurately and stablely.

Preset, Track Scanning, Area scanning and more

- Max can set 220pcs preset, each preset contain lens zoom and angle position and so on.
- Max can record and display 4 group track scanning route, each group max can contain 100 movements.
- After set defined area left and right boundary, speed dome camera can move with defined speed in this area.
- Call defined special preset, can come true continuous pan scan.

OSD English Menu

- Built in English menu, through menu to display and change speed dome parameter.
- Pan/Tilt angle, zoom times and preset information can be displayed on screen.

PTZ Control

- Adopt RS485 communication protocol.
- Pan 0-360 degree continue rotate, tilt 0-90 degree with auto flip, no monitor Blind Spot.
- 0.6°-200° in pan speed,3.5°-30°in tilt speed, automatically adjust according to the lens zoom.

1.2 Function Instruction

Address Code Setup

Any operation commands has its own target speed dome camera address code,baud rate and control protocol, single camera only response the operation commands corresponded the same address code, baud rate and control protocol. This IR high speed dome camera 's baud rate, control protocol will be identified automatically by system.

Focus length/Rotate Speed Auto Match Technology

When manual adjust, as to long focus length situation, due to the high speed of speed dome camera, even touch joystick lightly will also make image move quickly. Based on human design, speed dome camera can adjust its speed in pan and tilt automatically according to focus length far or near, making manual follow target more simple and easy.

Auto Flip

When operator controls the lens toward the bottom and still press the joystick, at this time lens will auto flip 180 degree then up flip 90 degree, can monitor the back side image directly, which can achieve 180 degree whole continue monitoring.

Set and Call Preset

Preset is a certain position of speed dome camera which includes ptz's pan angle, tilt angle and camera lens focus and other position parameter, when need speed dome camera go to the certain position,call the certain preset directly which saved in the memory.Operator can save and call preset through control keyboard, DVR or other control equipment faster and easier. This speed dome camera support 220pcs presets.

Lens Control

(1) Focal Length Control

User can adjust focal length far and near through control keyboard or matrix to get needed image or subtle view.

(2) Focus Control

When system is in auto focus mode, camera lens will auto focus at the middle of view image to keep clear image when zoom changed; under special situation user can manual focus to achieve needed image vision. Under manual focus mode, if need to back to auto focus mode, only need to move joystick or send a special control command or call any preset.

Iris Control

User can adjust the camera's iris through control keyboard and manual adjust to get needed image brightness.

Night vision Function(Color/Black-white change)

Camera has built-in night vision function, under auto color/black-white mode will change CCD illumination according to the change of environment brightness. For example: in daytime because of enough brightness, using common illumination can guarantee color image. But in the night it will change into low illumination to show clear view with black-white mode.

Auto patrol

Put some presets as a group in a certain sequence, it will run this patrol continuously when speed dome camera is in idle mode.

Mode Scan

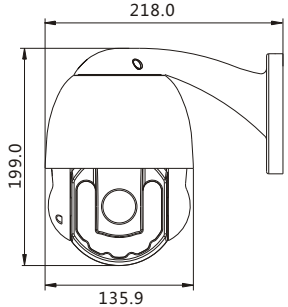
Mode scan is through menu to save speed dome tracking route, it will run this mode scan continuously when speed dome camera is in idle mode.

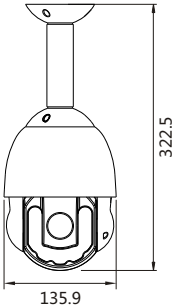
1.3 Speed Dome Camera Parameter

Electric			
Rated Voltage	DC12V/2A	Power Consumption	Max 15W
Decoder	Built in		
Set			
Communication protocol	PELCO-D/P HIK/DAHUA	ID	1-255
Baud rate(RS485)	2400/4800/9600bps/auto identify		
Operate			
Pan rotate	360 endless	Tilt rotate	90 degree, auto flip
		Preset	220
Speed	Pan 0.6°-200°/s Tilt 3.5°-30°/s	Monitor mode Preset.	patrol,pan scan and pattern scan
Environment			
Operate environment	Outdoor: -20℃~60℃ Indoor: -10℃~50℃	environment humidity	0-95% without condensation
IP Grade	IP66		
Physical			
Installation mode	Wall/ceiling mount		

1.4 Structure Dimension

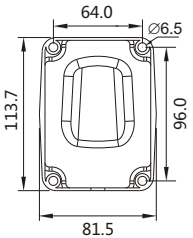
Speed Dome Dimension

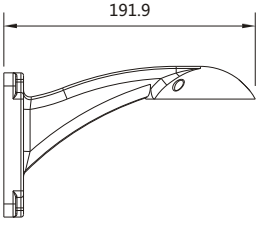




Unit:mm

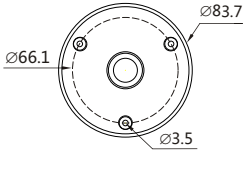
Bracket Dimension
Wall Mount Bracket

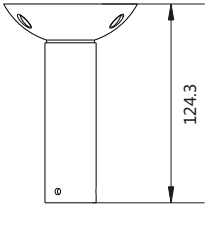




Unit:mm

Ceiling Mount Bracket





Unit:mm

2.1 Install Instruction

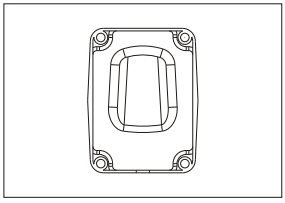
Prepare before installation
In order to prevent troubles, installation should be done by professional staff base on corresponding rules.

Confirm all spare-parts are complete, ensure application of this speed dome camera and installation mode is suitable to requirement.

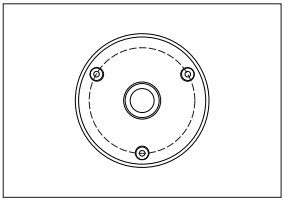
Wall/ceiling mount speed dome composite with bracket, zoom camera, transparent cover and other parts.

All tests have been done before leaving factory, user can directly install and use it.

2.2 Installation Method



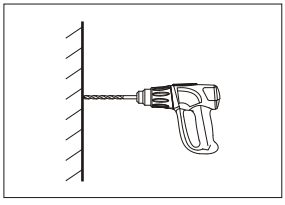
Wall Mount Bracket

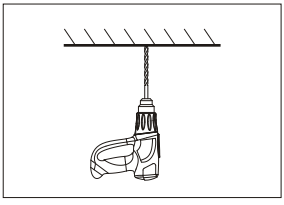


Ceiling Mount Bracket

Step 1-Draw positioning holes

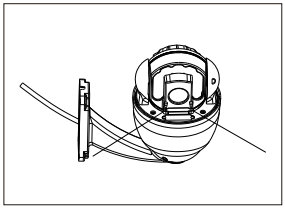
Take out bracket from package box, mark the holes' position based on bracket bottom installation holes.

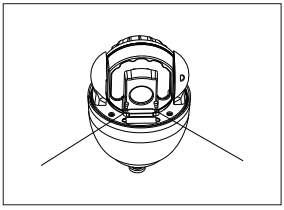




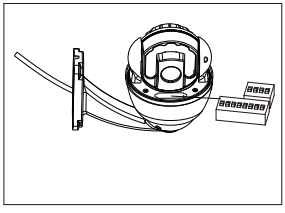
Step 2-Drill holes and put expansion screws in

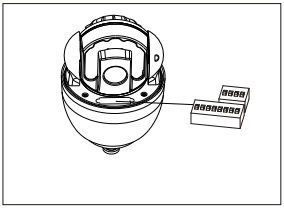
Drill expansion screw's installation holes at pre-marked position, then put expansion screws in.(**Note: Please bring expansion screws own.**)



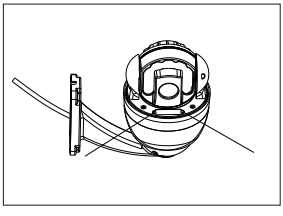


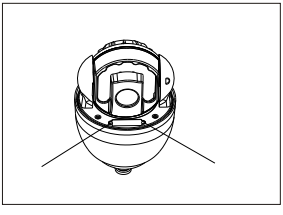
Step 3- Please unscrew the two screws on the transparent DIP switch cover. Use screwdriver open the 2 screw which used to fix the transparent DIP switch cover as above picture.



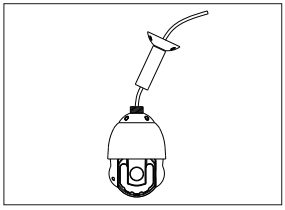


Step-4: Please refer to the third section of this chapter- Baud rate setup.

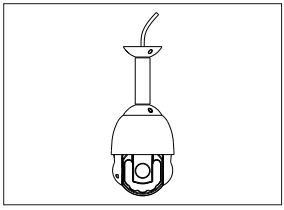




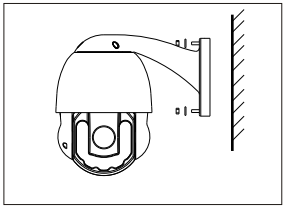
Step-5: Install the transparent DIP switch cover. Please put the 2 holes of the transparent DIP switch cover focus to the two screw hole of the speed dome cover, then use screwdriver to install that 2 screws.

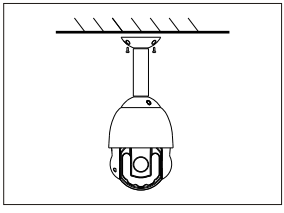


Step 6: Lead cable through bracket



Step 7: Ceiling mount connect speed dome and bracket.Put the connection port of the speed dome into bracket hole and put the screw lock into corresponding threaded holes.





Step 8: Fix the speed dome camera.

Lead cable drawn out from the holder recess, then put the 4 installation hole of bracket of speed dome focus on the wall / ceiling's 4pcs expansion screw and tighten that 4pcs nut. Then seal the appeared groove via glass glue.

Step 9: Cable connecting

Please refer to the Section VI of this chapter- Connecting Method.

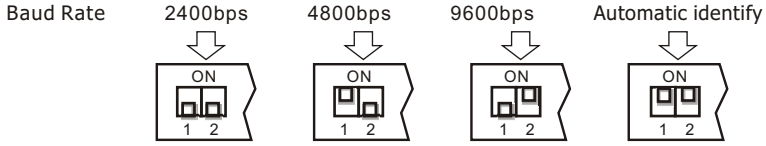
Step 10: Tear off protection film

Teal off protection film of transparent cover.

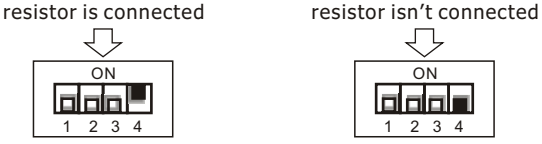
Note: please take care of transparent cover.

2.3 Baud Rate And Terminal Resistor Setup

Baud rate and corresponding DIP status as bellow:

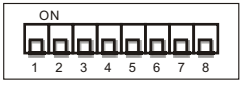


RS485 control bus need all device which connect to it shall be in parallel mode, and each end of the system shall be connected to a 120Ω resistor. Our speed dome has a 120Ω resistor in it, you need only set it up through dip switch SW2, put the 4th switch on, then the resistor is connected, details as below:



2.4 ID Setup

ID setup (address code setup obey binary rules) address code shall be set through 8 DIP switch (Sw1).
Keyboard control speed dome through communication bus, one keyboard can control max. 255pcs speed dome camera, each speed dome camera has its own address code, user can set address code through 8 DIP switch, details as bellow:



Addres s	SW1 Switch Setup							
	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF

4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
254	OFF	ON	ON	ON	ON	ON	ON	ON
255	ON	ON	ON	ON	ON	ON	ON	ON

2.5 Power Supply And Control Cable Connection

Power supply connection

Note: Please check rated voltage and power supply carefully, rated voltage and current as bellow:

Rated voltage	Rated voltage range	Current
DC12V	±10%	2A

Control line connection

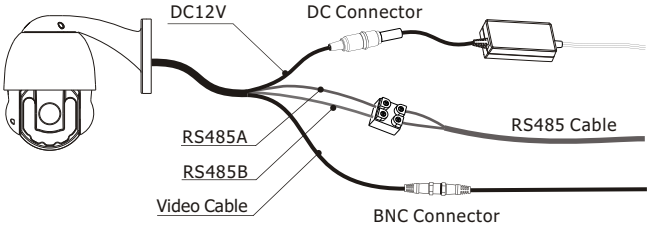
Connect RS485 line to keyboard controller or DVR, if there are more than one need to be controlled by keyboard or DVR, please connect it in parallel.

Note: (1) protocol and baud rate of keyboard and DVR can be set by customer, just make sure it is same with that of speed dome.

(2) the ID of different speed dome which is in same system shall be set as different.

2.6 Connection Method

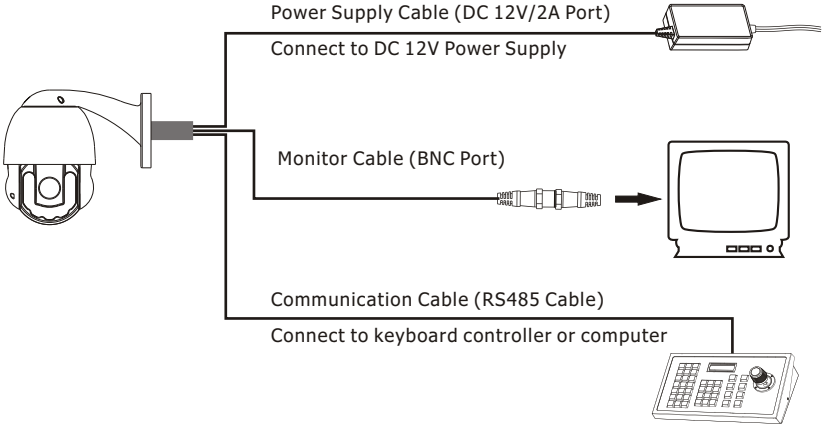
Connection method as bellow diagram, connect video cable, control cable,power supply cable in turn. Connection method of keyboard can refer to keyboard manual (connection cable order based on keyboard model, here only provide one possible example), detail please refer to bellow diagram:



DC12V connection details:

Port mark	Port instruction	Cable color/type	Connection instruction
Power line	DC12V input port	DC connector	Connect to DC12V power supply
RS485A	RS485+	white	Connect to RS485+
RS485B	RS485-	green	Connect to RS485-
Video line	Video output port	BNC connector	Connect to monitor or other device

2.7 Typical Application Wiring Diagram


Power Supply Cable (DC 12V/2A Port)
Connect to DC 12V Power Supply
Monitor Cable (BNC Port)
Communication Cable (RS485 Cable)
Connect to keyboard controller or computer

Because different system platform's specific operation method is not totally same, generally subject to manufacturer's manual, different situation has special requirements and operation method.Please contact distributor to obtain necessary information. Hereby only introduce control method when it connect universal keyboard controller.

3.1 Power-on Self-test

After power-on speed dome camera, it will action in pan and tilt direction automatically. Through self-test to confirm speed dome camera working normally.

Control speed dome camera up, down, left and right rotate:

After select one camera, can manual control speed dome camera's up, down, left and right movements through keyboard joystick. Rocking of joystick control camera action, when joystick rock to right, camera will also move to right, similarity, when joystick move to left then camera will also move to left. When joystick move in tilt direction, camera also will make corresponding action in tilt direction. When rock joystick in diagonal direction, can make camera make pan and tilt direction action at the same time, and the movement direction same as joystick.

3.2 Preset Setting

Operation steps as below:

(1)Select camera (please refer to keyboard controller manual for details).

(2)Operate joystick or zoom+/- button to adjust camera image.

(3)Press (PRESET) + (N) (input specified preset number) + (ENTER), save current position parameters as a preset.

3.3 Call a Preset

Operation steps as below:

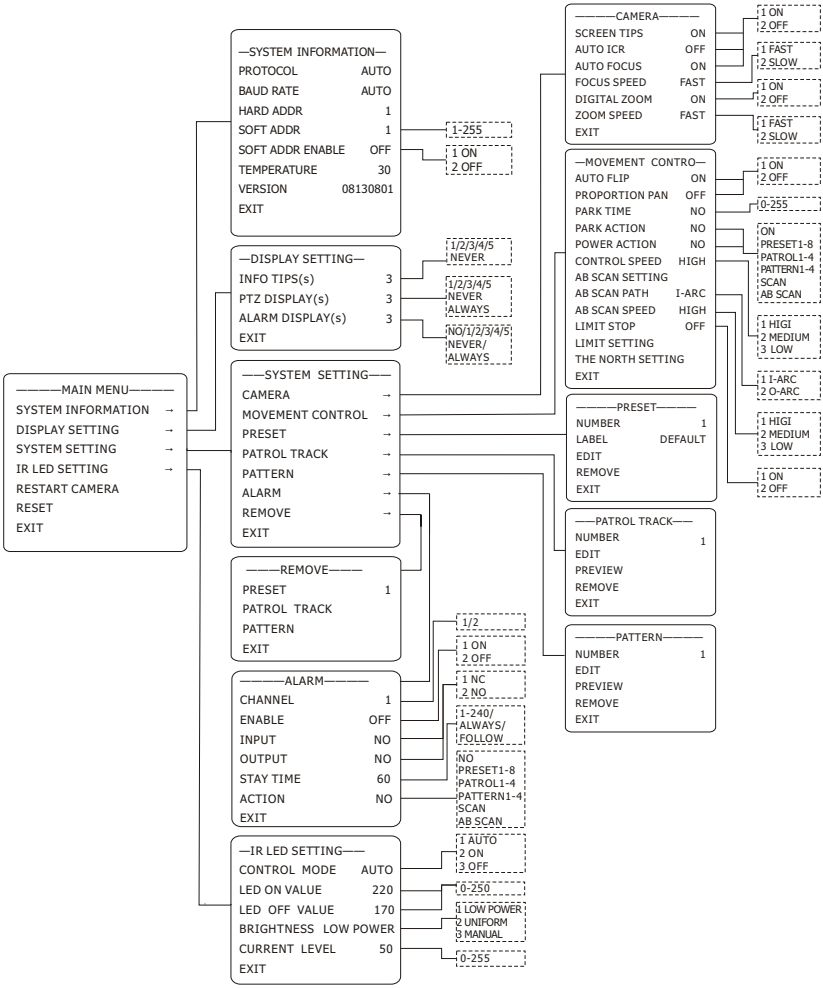
(1) Select camera.

(2) Press (SHOT) + (N) (input specified preset number) + (ENTER), camera move to corresponding preset position at once, zoom+/- will also adjust according to the parameter of preset automatically.

3.4 Preset Function Form

call special preset	Function explanation
95	Get into main menu
98	High speed auto-scan
99	Low speed auto-scan
221/92	setting A position of AB line scan
222/93	setting B position of AB line scan
223	High speed scan
224	medium-speed scan
225/94	Low speed scan
226	Out-arc scan
227	Inner-arc scan
228	enable alarm function
229	Disable alarm function
230	Clear Screen
231-238/35-38	Call patrol 1-8/1-4
241-244/41-44	Call Mode scan 1-4
245-250	null
251	Manual high speed
252	Manual medium speed
253	Manual low speed
254	Motor calibration

4.1 Menu Setup Topology



Chapter 4 Menu Setup

This Chapter will introduce the OSD menu operation in detail. PTZ self-test when power up, it will display the following information on the monitor.

PROTOCOL	AUTO
BAUD RATE	AUTO
HARD ADDR	1
SOFT ADDR	1
SOFT ADDR ENABLE	OFF

Due to the PTZ operation is not complete the same based on different surveillance system, for the detail operation, please contact with distributors.Below is the general introduction of the basic operation of the keyboard control to the OSD menu.

Enter OSD Main Menu

SHOT 95, enter OSD main menu. 【OPEN】(IRIS open) is confirm button,【CLOSE】(IRIS close) Exit the menu.

Enter Other Menu

Up/down move the joystick to make the cursor point to a certain menu, press【OPEN】button, enter menu.

Function Select

Up/down move the joystick to make the cursor point to a certain function, press【OPEN】button, select the function.

Parameters Select

Up/down move the joystick, select the parameter, press【OPEN】button, save the parameters.

Save Setting

Press【OPEN】button, save the parameters, it is valid under the presentation.

Cancel Setting
Back to the last menu: press【Close】button, back to the last menu, it is valid under the tips.

Exit Menu
Up/down move the joystick to make the cursor point to the "Exit" option, then press【OPEN】button, Exit the OSD Menu.

4.2 Main Menu

After the PTZ powered up and work normally, SHOT 95, enter main menu, the monitor displayed as below diagram 4.1.

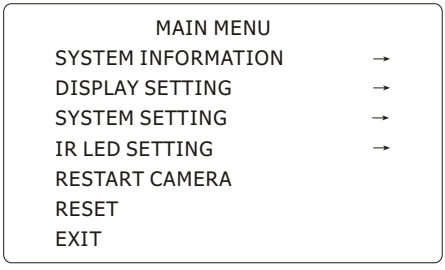


Diagram 4.2 Main Menu

The explanation of each option in Main Menu

- <SYSTEM INFORMATION>: Display system information menu.
- <DISPLAY SETTING>: Screen information display the time.
- <SYSTEM SETTING>: Set the parameter of speed dome.
- <IR LED SETTING> Set the parameter of the IR light
- <RESTART CAMERA>: Re-start the zoom module.
- <RESET>: All the parameters revert to default setting.
- <EXIT>: Exit the OSD menu.

4.3 System Information Menu

To check the basic information of the PTZ.

SYSTEM INFORMATION	
PROTOCOL	AUTO
BAUD RATE	AUTO
HARD ADDR	1
SOFT ADDR	1
SOFT ADDR ENABLE	OFF
TEMPERATURE	30
VERSION	08130801
EXIT	

Diagram4.3 System Information Menu

The explanation of each option in System Information

- <PROTOCOL>: Display the serial port of communication protocols of the PTZ.
- <BAUD RATE>: Display the communicate speed of the PTZ.
- <HARD ADDR>: Display the hardware tip address : 1-255.
- <SOFT ADDR>: Display the soft address: 1-255.
- <SOFT ADDR ENABLE>: Display if the soft address of the ptz can use.
- <TEMPERATURE>: Display the inner temperature of the PTZ
- <VERSION>: Display the software Version that used.
- <EXIT>: Exit the menu.

Remark: Each options in the System information menu can not be modified.

4.4 Display Setting Menu

DISPLAY SETTING	
INFO TIPS(s)	3
PTZ DISPLAY(s)	3
ALARM DISPLAY(s)	3
EXIT	

Diagram4.4 Display Setting Menu

The explanation of each option in Display setting menu

- <INFO TIPS (S)> : The screen will display the time when operate the PTZ.
- <PTZ DISPLAY (S)> : Will display the time when operate the PTZ.
- <ALARM DISPLAY (S)> : Set the Alarm

4.5 System Setting menu

SYSTEM SETTING	
CAMERA	→
MOVEMENT CONTROL	→
PRESET	→
PATROL TRACK	→
PATTERN	→
ALARM	→
REMOVE	→
EXIT	

Diagram4.5 System Setting Menu

4.5.1 Camera

- <CAMERA>: To set the parameters of the zoom module, select enter.

CAMERA	
SCREEN TIPS	ON
AUTO ICR	OFF
AUTO FOCUS	ON
FOCUS SPEED	FAST
DIGITAL ZOOM	ON
ZOOM SPEED	FAST
EXIT	

Diagram4.5.1 System Camera Menu

The explanation of each option in Camera Menu.

- <SCREEN TIPS>: Whether open the inner tips of the Zoom module.
- <AUTO COLOR TURN TO BLACK>: Whether open the auto color turn to black function.
- <AUTO FOCUS>: Whether open the Auto Focus function.
- <FOCUS SPEED>: Set the Focus speed of the zoom module.
- <DIGITAL ZOOM> : Whether open the Digital Zoom function of the zoom module.
- <ZOOM RATE>: Set the Zoom rate of the Zoom module.

4.5.2 Movement Control

<MOVEMENT CONTROL> : To set the Movement parameter of the PTZ, and enter.

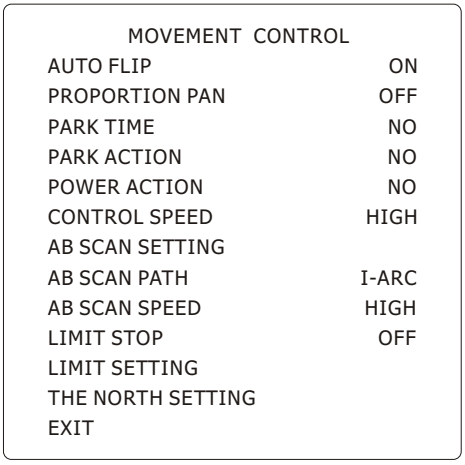


Diagram 4.5.2 System Motion Control

The explanation of each option in Movement control Menu

<AUTO FLIP> : The PTZ Auto flip 180 degree when the PTZ go down to lowest point.

<PROPORTION PAN> : PTZ decrease the speed automatically according to the zoom times.

<PARK TIME> : To set the time when to run Park action.

<PARK ACTION> : To set the Park action.

<POWER ACTION> : Set the menu when powered on, it will auto execute before the PTZ receive the manual command.

<CONTROL SPEED>: To set the rotation speed of the PTZ.

<AB SCAN SETTING>: To set the start and stop position of AB scan.

<AB SCAN PATH>: Select line scan path.

<AB SCAN SPEED> : To set the AB scan speed.

<LIMIT STOP> : Whether open limit stop function.

<LIMIT SETTING>: To set the up down left and right limit point.

<THE NORTH SETTING> : To set the North setting.

4.5.3 Preset

□ <PRESET> : execute the operation of the Preset, enter.

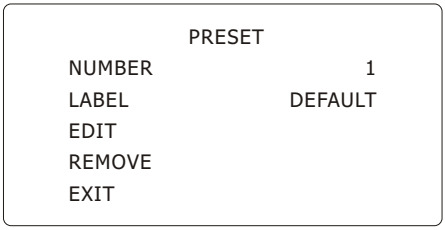


Diagram 4.5.3 Preset

The explanation of each option in Preset menu.

□ <NUMBER> : Select the No. Of the preset, 1-220 is valid.

□ <LABEL> : This option is default, can not be modified.

□ <EDIT>: Set the position of the selected Preset.

□ <REMOVE>: Remove the selected Preset.

4.5.4 Patrol Track

□ <PATROL TRACK> : Execute the operation of Patrol Track, enter

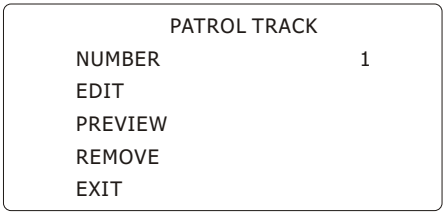


Diagram 4.5.4 Patrol Track

The explanation of each option in Patrol Track menu.

□ <NUMBER> : Select the No. Of the Patrol , 1-8 is valid.

□ <EDIT>: Set the information of the Patrol track.

□ <PREVIEW>: Preview the Patrol track.

□ <REMOVE>: Remove the selected Patrol track.

4.5.5 Pattern

- <PATTERN> : Execute the operation of the Pattern, enter.

PATTERN	
NUMBER	1
EDIT	
PREVIEW	
REMOVE	
EXIT	

Diagram 4.5.5 Pattern

The explanation of each option in Pattern Scan menu.

- <NUMBER>: Select the No. Of the Pattern Scan, 1-4 is valid.
- <EDIT> : Edit and record the path of the selected Pattern Scan.
- <PREVIEW> : Preview the selected Pattern Scan.
- <REMOVE>: Remove the selected Pattern Scan.

4.5.6 Alarm

- <ALARM> : Execute the operation of the Alarm Scan, enter.

ALARM	
CHANNEL	1
ENABLE	OFF
INPUT	NO
STAY TIME	NO
ACTION	60
EXIT	NO

Diagram 4.5.6 Alarm

The explanation of each option in Alarm menu.

- <CHANNEL> :Select the channel of the operated,1-2 is valid.
- <ENABLE> :To show if the present alarm channel is enable or disable.
- <INPUT> :Set the input mode of the alarm.
- <STAY TIME> :Set the relay action time of the alarm output.
- <ACTION> :To set the PTZ motion when react to alarm.

4.5.7 Remove

- <REMOVE> : Remove the Preset, Patrol track, Pattern Scan information.

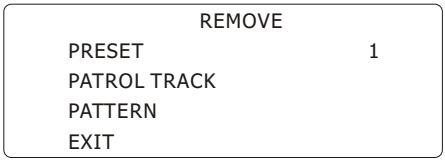


Diagram 4.5.7 Remove

The explanation of each option in Remove menu.

- <PRESET> : Remove all the Presets.
- <PATROL TRACK> : Remove all the Patrol Tracks.
- <PATTERN> : Remove all Patterns.

4.6. IR LED Setting

IR LED Setting Menu

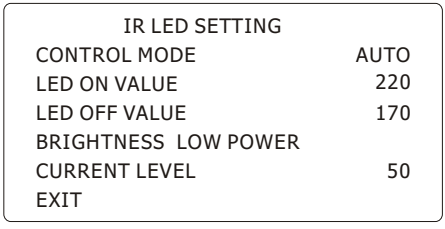


Diagram 4.6 IR LED Setting

The explanation of each option in IR LED Setting menu.

- <CONTROL MODE>:To set the control mode of the IR, such as Auto, On and Off mode.
- <LED ON VALUE>: To set the threshold of turn on the IR.
- <LED OFF VALUE>: To set the threshold of turn off the IR.
- <BRIGHTNESS LOW POWER>:To set the bright mode of the IR, such as PAMAS, even increase and manual control mode.
- <CURRENT LEVEL>: Current illumination intensity, 0-255 is vail.

4.7. Re-start Camera

Selected this option can decide whether need to restart the Zoom module.

4.8. Recover Factory Setting

Selected this option can decide whether need to recover the PTZ menu parameters, please re-start the PTZ after the recovery.

Chapter 5 Appendix

5.1 FAQs

Faults Phenomenon	Check part	Probable Cause	Solution
There is no action and no image after powered up	Check power adapter and power PCB	Power adapter	Change power supply
		Power circuit exist has problem	Replace
There is image, but do not self-test when powered on	Motor has abnormal sound	Mechanical problem	Overhaul if it get stuck in something
	PTZ Swings	Very incline	Set it straight
	N/A	Power is not enough	Change a new power supply that meet the requirements
	N/A	Something wrong with motherboard	replace
There is no image, but can do self-test after powered on	Connection line between power panel and connection panel	Do not insert properly	Insert again and push protective cover
	Video line, BNC Connector	Do not install contact properly	Make sure all connection is proper
There is image, and can do self-test, but can not control after powered on	RS485 communicate line	Something wrong with the circuit	Make sure all connection is proper
	N/A	Irregular operation leads to out of control	Power off and restart
		Something is wrong with the motherboard	replace
Video image is Foggy	N/A	Speed dome camera is in state of manual focusing	Operate speed dome camera or call any one preset to make it back to auto. focusing
	Transparent cover	Transparent cover is dirty	Clean transparent cover

5.2 Clean the Transparent Cover

In order to make the image clear, the cover need to be cleared timely.

When clear, please be careful for avoiding to touch the transparent cover directly, the acid sweat of the human finger may rust the surface of the cover. The scratch of the flint to the transparent cover will lead to foggy image, affect the image quality.

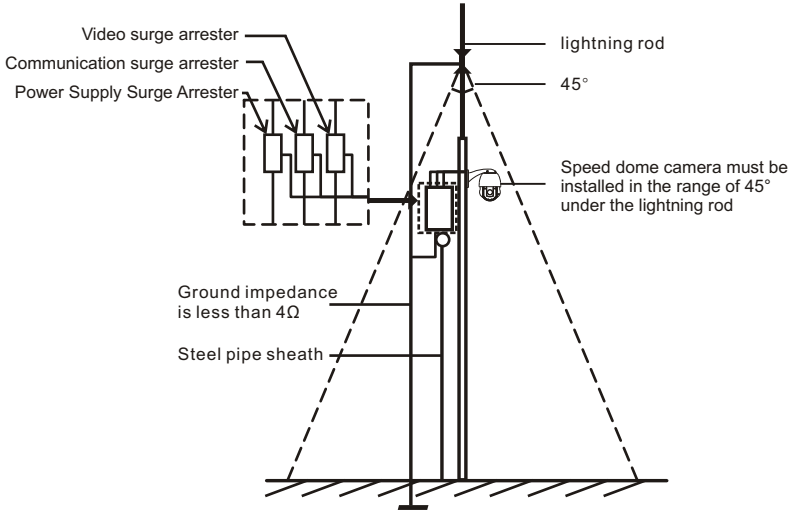
Please use soft enough dry cloth or other replacement to wipe the inner and surface.

If seriously dirty, can use neutral cleanser, any high grade furniture cleanser can used to clean the transparent cover.

5.3 Lightning and Surge protection

Outdoor speed dome camera must consider thunder-proof and surge immunity. On the premise of guaranteeing electrical safety,we can take following lightning protection measures:

- Atleast keep 50m distance between signal transmission line and high voltage equipment or high voltage cable.
- Outdoor wiring under the eaves.
- For open field, adopt seal steel pipe buried wiring way, and adopt one-point earthing with the steel pipe. Do not adopt aerial wiring.
- It need to add extra high-frequency thunder-proof device and lightning rod in strong thunderstorms area or high inductive voltage region(such as high voltage substation).
- Thunder-proof and grounding design of Exterior installation and circuit must be in accordance with building lightning proof requirements; It must meet national standard and industry standard.
- System must be equipotential grounding. Grounding device must meet anti-jamming and electric safety dual requirements. The connection with strong electrified wire netting can't be short connection or mixed connection. When system is in the condition of single-phase grounding, ground impedance is less than 4Ω, ground wire cross-section area must be more than 25 mm^2


Video surge arrester
Communication surge arrester
Power Supply Surge Arrester
lightning rod
45°
Speed dome camera must be installed in the range of 45° under the lightning rod
Ground impedance is less than 4Ω
Steel pipe sheath

5.4 RS485 Bus Wiring

1. RS485 bus basic characteristic

RS485 industry bus is characteristic impedance 120Ω half-duplex communication bus according to RS485 industry bus standard.

2. RS485 bus transmission distance

When use 0.511mm (24AWG) screen twisted pair cable as communication cable. Depending on different baud rate, the longest transmitting distance theoretical value is shown as below:

The longest transmitting distance of baud rate

2400Bps 1800m
4800Bps 1200m
9600Bps 800m

3. Connection mode and terminal resistance

RS485 industry bus standard require adopt snake-like wiring (chrysanthemum chain), The ends must connect with 120Ω terminal resistance(such as figure 6), ease connection can adopt figure 7, but distance of section "D" can't exceed 7m.

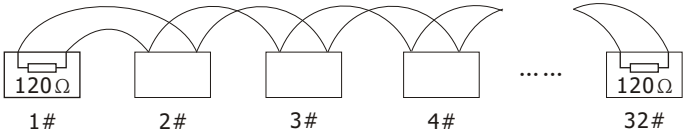


Fig6

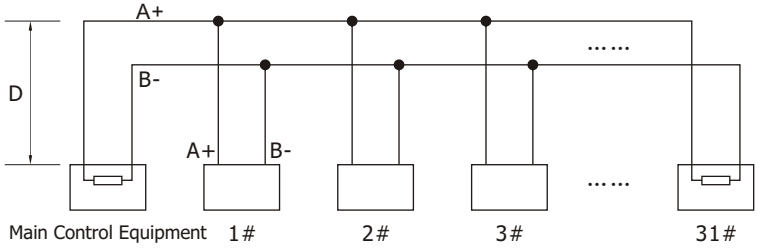


Fig7